

ADDITIONAL NOTES ON THE GENUS VITEX. VI

Harold N. Moldenke

VITEX NEGUNDO L.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 59 (1960) and 2: 1213 & 1214. 1960; T. H. Everett, New Illustr. Encycl. Gard. 13: 2434. 1960; Satmoko, Malay. Nat. Journ. Spec. Issue 109. 1961; Sebastine & Henry, Bull. Bot. Surv. India 3: 61. 1961; Nait & Rehman, Bull. Bot. Gard. Lucknow 76: 20. 1962; Prasad, Leprosy Rev. 33: 207--209. 1962; P. Singh, Bull. Nat. Bot. Gard. 69: 57. 1962; Liu, Illustr. Nat. & Introd. Lign. Pl. Taiwan 2: 1229, pl. 1037. 1962; Cuf., Bull. Jard. Bot. Brux. 32: Suppl. 797. 1962; Belič & Čerin, Vestnik Slovensk. Kemij. Drust. 9: 33. 1962; Sastry & Viart, Trav. Sect. Scient. Inst. Franç. Pond. 1 (4): 31. 1962; Li, Wood. Fl. Taiwan 16, 832, 833, & 973, fig. 334. 1963; Gleason & Cronquist, Man. Vasc. Pl. 582. 1963; Hanelt, Kulturpfl. 11: 215 & 228. 1963; Legris, Trav. Sect. Scient. Inst. Franç. Pond. 6: 328, 334, 338, 357, & 586. 1963; Sharma & Mukhopadhyay, Journ. Genet. 58: 366, 376, 383, & 539, pl. 11, fig. 30. 1963; Janardhanan, Bull. Bot. Surv. India 5: 371. 1963; Rao, Aggarwal, & Mukherjee, Bull. Bot. Surv. India 5: 146, 309, 311, 315, & 321. 1963; Jain, Bull. Bot. Surv. India 5: 356. 1963; Deb, Bull. Bot. Surv. India 5: 54. 1963; Joseph, Bull. Bot. Surv. India 5: 294. 1963; Patil, Bull. Bot. Surv. India 5: 20. 1963; Eyster, Biol. Abstr. 45: 1349. 1964; S. V. Ramaswamy, Bull. Bot. Surv. India 6: 10 & 17. 1964; Harkness, Phytologia 10: 269. 1964; Moldenke, Résumé Suppl. 11: 8. 1964; Bhattacharyya, Bull. Bot. Surv. India 6: 205. 1964; Rao & Sastry, Bull. Bot. Surv. India 6: 267 & 281. 1964; Panigrahi, Chowdhury, Raju, & Deka, Bull. Bot. Surv. India 6: 255--256. 1964; Chopra, Badhwar, & Ghosh, Poison. Pl. India 2: 695. 1965; Backer & Bakh., Fl. Java 2: 605. 1965; Moldenke, Résumé Suppl. 12: 9. 1965; Hänsel, Leuckert, Rimpler, & Schaaf, Phytochem. 4: 19 & 21. 1965; N. Taylor, Guide Gard. Shrubs & Trees 325. 1965; Kartawinata, Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg. 27. 1965; Mukerjee, Bull. Bot. Surv. India 7: 136. 1965; Mani, Bull. Bot. Surv. India 7: 114. 1965; Datta, Handb. Syst. Bot. 183. 1965; Neal, In Gard. Hawaii, ed. 2, 729. 1965; Liogier, Rhodora 67: 350. 1965; L. J. King, Weeds of the World 59. 1966; Gausson & al., Trav. Sect. Scient. & Tech. Inst. Franç. Pond. Hors ser. 8: 57 & 64. 1966; T. C. Whitmore, Guide Forests Brit. Solomon Is. 149 & 206. 1966; Panigrahi, Bull. Bot. Surv. India 8: 3 & 4. 1966; Chavan & Oza, Mahar. Saraj. Univ. Baroda Bot. Mem. 1: 187. 1966; Malick, Bull. Bot. Surv. India 8: 55. 1966; Moldenke, Phytologia 15: 79, 88, 226, & 267--268. 1967; Moldenke, Résumé Suppl. 15: 9, 15 & 16. 1967.

Additional illustrations: Tu, Chinese Bot. Dict., abrdg. ed., 462. 1933; Kanehira, Form. Trees, rev. ed., 652, fig. 607. 1936;

V. S. Rao, Journ. Indian Bot. Soc. 31: 304, fig. 36—38. 1952; Moldenke in Humbert, Fl. Madag. 174: 79, fig. 10 (3 & 4). 1956; Liu, Illustr. Nat. & Introd. Lign. Pl. Taiwan 2: pl. 1037. 1962; Li, Wood. Fl. Taiwan 833, fig. 334. 1963; Sharma & Mukhopadhyay, Journ. Genet. 58: 383, pl. 11, fig. 30. 1963.

Recent collectors describe this plant as a bush 5—10 feet tall, fruiting also in July. The corollas are described as "violet" on Koelz 25155, "violet, lip paler" on Koelz 22885, "lavender" on Koelz 30110, and "bluish, center of the hood white" on Chand 7691. Nair & Rehman (1962) describe the pollen as 3-zonicolpate, prolate (39 x 27 μ ; range 35—39 x 25—28 μ), the colpi end acute, tenuimarginate, the margin spightly wavy, 2.8 μ wide, narrower toward the ends, the apocolpium diameter 7 μ , the exine 0.5 μ thick, the ectine almost as thick as the endine, psilate. Kitamura (1960) refers to V. negundo as a "vicariant" of V. agnus-castus L.

The Lam (1924) reference in the bibliography is often cited as "1925", but the latter date is merely the title-page date for the volume; the pages cited appeared in 1924. The Boissier (1879) reference is sometimes given as "1875", but the page involved was apparently not published until 1879.

The original description of V. arborea Fischer (1829) is as follows: "Foliis digitatis; foliolis 5 lanceolatis, acuminatis, serratis, nervis obliquis impressis; racemis paniculatis, terminalibus. Frutex 6--8-pedalis aut altior. Rami juniores, petioli, nervi foliorum, calicesque pubescentes. Corolla alba. Affinis V. Agn. casto, Lin. Differt foliis non laevibus, nervis obliquis paginae superioris profunde insculptis, ita ut quasi rugosa videatur." It appears, therefore, that this name belongs in the synonymy of f. alba P'ei, rather than in the synonymy of the typical form of the species, as previously regarded.

The original description of Agnus castus negundo Carr. (1871) is "Arbrisseau ou petit arbre très-ramifié, à port et facies rappelant généralement ceux des Agnus castus vulgaris, à folioles plus courtes et plus largement ovales, dentées, d'un vert aussi un peu plus intense, parcourues de nervures saillantes qui, en dessus, forment des enfoncements réguliers. Inflorescence paniculée-spiciforme, largement ramifiée, à ramifications grêles, allongées-étalées. Fleurs très-petites, blanchâtres, très-légèrement lilacées."

The species has been found growing in hedges and sandy riverbeds, on forest-demuded hillslopes and flat ground, along streams and in the immediate neighborhood of Salix tetrasperma on riversides. It is recorded from Rameswaram and Krusadi Islands by Rao, Aggarwal, & Mukherjee (1963), where it is found with Clerodendrum indicum, grasses, and sedges on consolidated sand dunes with pinkish-white soil. Rao & Sastry (1964) state that it is "common along watercourses" in the shrub strata in Madhya Pradesh, where Joseph (1963) also records it as "fairly common near streams". Vyas (1965) records it as "common in the middle zone" in north-

eastern Rajasthan, at 360—520 meters altitude. Arora & Aggarwal (1965) describe it as "cultivated or naturalized on the main strand." Mukerjee (1965) calls it "common in villages" in West Bengal; Malick (1966) also describes it as "common" in that state. Panigrahi (1966) refers to it as "abundant on dry open flat tops of hills", while Bose (1920) calls it "a common shrub or tree with trifoliolate or quinate leaves". Dastur (1952) avers that the species is found throughout India and Pakistan, ascending to 5,000 feet in the northwestern Himalayas. He tells us that the wood is hard and grayish-white, is used for building purposes and for firewood, the ashes used in dyeing, and the aromatic leaves as an insect repellent. He also tells us that it is used in combination with other drugs in vapor baths against fevers, the roots and leaves in the treatment of snakebite, especially the bites of the cobra, that the leaves are smoked like tobacco for catarrh and headache, in bathing by women after childbirth and for cleansing maggoty ulcers, and that the flowers are a cardiac tonic and astringent and are employed in the treatment of diarrhea.

Nath (1960) states that V. negundo is planted to reclaim swamp land. Janardhanan (1963) also states that the leaves are a tonic and vermifuge, the leaf juice used by the natives in Maharashtra to remove fetid discharges and worms from ulcers. Datta (1965) reports the leaves used as a febrifuge and for preserving stored grain against insect attack. Jain (1963) and Deb (1963) content themselves with saying that it is a medicinal plant. King (1966) says that Vitex negundo with Loranthus longiflorus attached is used medicinally, inasmuch as both the host and the parasite are said to have medicinal properties; they are boiled together and used as a cough remedy. Chavan & Oza (1966) report that in Gujarat it is used to cure headaches, its flowers and fruits almost all through the year, and regard V. bicolor Willd. as a synonym.

Chopra, Badhwar, & Ghosh (1965) report that the plant is "called Indian privet, common throughout India; contains trace of an alkaloid and is largely used as an alternative, expectorant, febrifuge, tonic, and for promoting the growth of hair; the plant's leaves are also laid over stored grain to keep off insects; the plant also appears NOT to be eaten by cattle."

Additional vernacular names recorded for this species are "English privet", "indrani", "kyaung-ban", "kyet-yo", "ki-u-ban", "ki-yo", "malamala akako" [also applied to Sophora tomentosa], "malamala alako", "m-kian-keng", "m-kian-tê", "nagdoz", "nagod", "negundo blätteriger Mönchspfeffer", "nirgud", "nishindi", "pōh-kiun-á", "po-kiun", "ran-gura", "shirwari", "taiwan-ninzinboku", and "zuugora".

Itakawa & Yamasita (1942) report the presence of sabinen, $C_{10}H_{16}$, in this plant as well as in such diverse other species as Chamaecyparis formosensis & C. obtusa, Cupressus macrocarpa, Curcuma longa, Hyptis suaveolens, Juniperus sabina, Libocedrus bidwillii, Ocimum canum, Piper cubeba, Pittosporum eugenioides, Thuja occidentalis, Thujopsis dolabrata, and Zanthoxylum rhetsa.

Karrer (1958) reports the presence of protocatechusäure, $C_7H_6O_4$, in this plant as well as in such other diverse plants as *Aralia chinensis*, *Cerasus lusitanica*, *Escallonia tortuosa*, *Hibiscus sardiffa*, *Illicium religiosum*, *Phycomyces blakesleeanus*, and *Thespesia lampas*. He also reports the presence of p-oxybenzoensäure, $C_7H_6O_3$, in *Vitex negundo* and in *Catalpa bignonioides*, *C. ovata*, *Grindelia robusta*, and *Populus balsamifera*. Belič & Čerin (1962) found casticin in the seeds of *Vitex negundo*. Prasad (1962) tells us that *Alectra parasitica* grows parasitically on the roots of *Vitex negundo* in India and that a powder made from this parasite's rhizomes was effective in the treatment of leprosy, with no toxic reactions.

Mani (1965) describes a pouch gall on the upper and lower surfaces of the leaflet-blades of *Vitex negundo*. It is an irregularly globose, sessile, agglomerate mass of solid fleshy erineum-filled gall tissue, 2--3 x 10--15 mm. in size, made by a species of *Eriophytes*, and identified by him as his gall number 477.

Sebastine (1959) cites his no. 282, Malick (1966) cites Chatterji 3, and Panigrahi (1966) cites his no. 11891 from India. Nehr & Rehman (1962) cite *Nat. Bot. Gard.* 35016, slide 2692. Li (1963) cites *H. H. Bartlett* 6267, *Faurie* 149 & 338, *Gressitt* 461, *Hayashi* 21212, *A. Henry* 905 & s.n., *Nakazawa* s.n., *Tanaka* 97, *Tanaka & Shimada* 17878, *Tseng* s.n., and *E. H. Wilson* 10972 from Formosa. Chavan & Oza (1966) cite *Oza* 859 & 860 from Gujarat, India.

Material has been misidentified and distributed in herbaria as *V. altissima* L. f. On the other hand, the *H. C. Cheo* 4 [Herb. Univ. Nanking 18069], distributed as typical *V. negundo*, is actually var. *heterophylla* (Franch.) Rehd., while *H. C. Cheo* 200 [Herb. Univ. Nanking 18265], *Lau* 3051, and *Ramaswamy* 511 are var. *intermedia* (P'ei) Moldenke; *E. H. Bryan* 556, *Elmer* 11999, *Kajewski* 801, *Kondo & Edaño* s.n. [Philipp. Nat. Herb. 38739 & 39032], *Lütjeharms* 4655, *R. C. McGregor* s.n. [Herb. Philip. Bur. Sci. 10270], *Seale* s.n. [May 23, 1903], and *G. T. Velasquez* 11 are all *V. trifolia* var. *bicolor* (Willd.) Moldenke, and *J. W. Gillespie* 2953, 4164.1, & 4691.8 are *V. quinata* var. *puberula* (H. J. Lam) Moldenke.

Additional citations: INDIA: Assam: *Chand* 7691 (Mi); *Koelz* 22885 (Mi), 25155 (Mi), 30110 (Mi). Bihar: *Koelz* 19587 (Mi). Hyderabad: *Mathur* 165 [Herb. Hyderab. 363] (H1--209882). Mysore: *Ramaswamy* 2897 (Lw). Surguja: *Koelz* 19519 (Mi). State undetermined: *Kuntze* 7367 [Fabbalpur] (N). CHINESE COASTAL ISLANDS: Hainan: *Lei* 202 (Bi), 700 (Mi); *W. T. Tsang* 622 [Herb. Lingnan Univ. 17371] (Mi). WESTERN PACIFIC ISLANDS: FORMOSA: *H. H. Bartlett* 6267 (Mi). PHILIPPINE ISLANDS: Luzon: *E. D. Merrill* 3627 (Bi); *Merritt & Darling* s.n. [Herb. Philip. Forest. Bur. 13817] (Bi); *Otanés* s.n. [Herb. Philip. Bur. Sci. 17995] (Bi). CULTIVATED: Ha-

waiian Islands: Neal s.n. [4/20/46] (Bi), s.n. [Alamoana Park, Jan. 6, 1953] (Bi); Tongg s.n. [Honolulu, 5/24/32] (Bi, Bi).
 Missouri: D. B. Dunn 12618 (Lb-39798). North Carolina: A. C. Mathews s.n. [Fall 1938] (Hi-21152).

VITEX NEGUNDO f. ALBA P'ei

Synonymy: Vitex arborea Fischer ex Desf., Cat. Hort. Paris, ed. 3, 391--392. 1829. Vitex arborea Desf. ex Schau. in A. DC., Prodr. 11: 685, in syn. 1847.

Additional bibliography: Desf., Cat. Hort. Paris, ed. 3, 391--392. 1829; Schau. in A. DC., Prodr. 11: 685. 1847; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1213 (1895), pr. 2, 2: 1213 (1946), and pr. 3, 2: 1213. 1960; Moldenke, Phytologia 8: 66--67. 1961.

The two binomials given in the synonymy above were cited by me as typical V. negundo L. in my previous publications, but a perusal of the original description reveals that it contains the phrase "Corolla alba" and therefore doubtless refers to the present color form.

VITEX NEGUNDO var. CANNABIFOLIA (Sieb. & Zucc.) Hand.-Mazz.

Emended synonymy: Vitex cannabifolia var. latifolia Miq., Cat. Mus. Bot. Lugd.-Bat. 70. 1870.

Additional & emended bibliography: Kwa-wi [trans. Savatier], Arbor. 4: pl. 1. 1759; Miq., Cat. Mus. Bot. Lugd.-Bat. 70. 1870; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1213. 1895; C. K. Schneid., Illustr. Handb. Laubholz. 2: 592 & 594--595, fig. 384 q. 1911; Stapf, Ind. Lond. 6: 478. 1931; Hand.-Mazz., Act. Hort. Gothenb. 9: [67]--68. 1934; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1213 (1946) and pr. 3, 2: 1213. 1960; Moldenke, Phytologia 8: 67. 1961; Belič & Čerin, Vestnik Slovensk. Kemij. Drust. 9: 33. 1962; Neal, In Gard. Hawaii, ed. 2, 729. 1965.

Additional illustrations: Kwa-wi [trans. Savatier], Arbor. 4: pl. 1. 1759; C. K. Schneid., Illustr. Handb. Laubholz. 2: fig. 384 q. 1911.

Belič & Čerin (1962) report the presence of casticin in the seeds of this plant. Miquel (1870) cites, and apparently based his var. latifolia upon, "Siebold 5 [specimens?], Bürger 2 [specimens?]".

VITEX NEGUNDO var. DENSIFLORA Haines, Bot. Bihar & Orissa 4: 712. 1922.

Bibliography: Haines, Bot. Bihar & Orissa 4: 712. 1922; Moldenke, Résumé Suppl. 15: 9. 1967.

The original description of this taxon reads as follows: "Leaves all 3-foliolate; leaflets smaller, 1--3 inches, more broadly lanceolate; panicle almost thyrsiform; corolla very tomentose, only .25 in. long. diameter. Along the Sone, Palamau! The root is tonic, febrifuge and expectorant, and the leaves tonic and

vermifuge. A decoction with long pepper is given in catarrhal fever. Dutt." I know nothing further about this plant.

VITEX NEGUNDO var. HETEROPHYLLA (Franch.) Rehd.

Additional synonymy: Vitex incisa L. ex Carr., Rev. Hort. 42/43: 415—416. 1871. Agnus-castus incisa Carr. ex Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 59, in syn. 1893. Vitex agnus castus incisa Hort. ex Beissner, Schelle, & Zabel, Handb. Laubh. 426, in syn. 1903. Vitex agnus castus serrata Hort. ex Beissner, Schelle, & Zabel, Handb. Laubh. 426, nom. nud. 1903. Vitex incisa negunda Pellett ex Milum, Biol. Abstr. 27: 1035, sphalm. 1953. Vitex sinensis Mill. ex Belić & Čerin, Vestnik Slovensk. Kemij. Drust. 9: 33. 1962. Vitex negundo-incisa Belić & Čerin, Vestnik Slovensk. Kemij. Drust. 9: 33. 1962. Vitex negundo heterophylla Harkness, Phytologia 10: 269. 1964. Vitex negundo-incisa Clarke ex Moldenke, Résumé Suppl. 15: 25, in syn. 1967.

Additional & emended bibliography: Bocq., Adansonia 2: 101—103, 109, 111, 132, 164, & 165 (1862) and 3: 253, pl. 6, fig. 1—25. 1863; Bocq., Rev. Verbenac. 101—103, 109, 111, 132, 164, 165, & 253, pl. 6, fig. 1—25. 1863; Carr., Rev. Hort. 42/43: 415—416. 1871; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 59 (1893) and 2: 1213 & 1214. 1895; Beissner, Schelle, & Zabel, Handb. Laubh. 426. 1903; Haines, Bot. Bihar & Orissa 4: 712. 1922; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 1, 632 & 849 (1924) and pr. 2, 632 & 849. 1925; Svenson, Brooklyn Bot. Gard. Record 22: 7. 1933; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 3, 632 & 849 (1938). and pr. 4, 632 & 849. 1944; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 59 (1946) and 2: 1213 & 1214. 1946; L. H. Bailey, Man. Cult. Pl., ed. 2, 844 & 1114. 1949; W. J. Bean in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2249 & 2250. 1951; Pellett, Amer. Bee Journ. 92: 430—431. 1952; Milum, Biol. Abstr. 27: 1035. 1953; Mattoon, Pl. Buyers Guide, ed. 6, 294. 1958; Moldenke, Biol. Abstr. 32: 1135. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 59 (1960) and 2: 1213 & 1214. 1960; T. H. Everett, New Illustr. Encycl. Gard. 13: 2433 & 2434, 1960; Moldenke, Phytologia 8: 67—68. 1961; Belić & Čerin, Vestnik Slovensk. Kemij. Drust. 9: 33. 1962; W. J. Cody, Ind. Sem. 1963: 9. 1963; Harkness, Phytologia 10: 269. 1964; Moldenke, Résumé Suppl. 11: 8 (1964) and 12: 9. 1965; N. Taylor, Guide Gard. Shrubs & Trees 325. 1965; Moldenke, Résumé Suppl. 15: 15, 16, 24, & 25. 1967.

Additional & emended illustrations: Bocq., Adansonia 3: [Rev. Verbenac.] pl. 6, fig. 1—25. 1863; C. K. Schneid., Illustr. Handb. Laubholz. fig. 385 r—t. 1911; W. J. Bean in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2250. 1951; M. A. Pellett, Am. Bee Journ. 92: 430. 1952.

Beissner, Schelle, & Zabel (1903) record the common name "eingeschnittener Mönchspfeffer" for this plant.

The corollas are described as "pinkish" on Allard 11390, and the plant has been found flowering in July. Belić & Čerin (1962) re-

port the presence of casticin in its seeds. Everett (1960) tells us that it is the hardiest of the cultivated forms of the genus, surviving as far north as southern New England; Taylor (1965) reports that it may be cultivated safely up to Life Zone 4 in North America. Cody (1963) records it as cultivated in Canada, and Pellett (1952) in Cass County, Iowa. Mattoon (1958) lists 5 horticultural sources.

Pellett (1952) reports that honeybees work this variety, but other varieties are not particularly useful for honey. In southern Missouri it is reported to furnish up to three months of solid bloom, long after sweet-clover bloom is past, until almost up to frost. It is also good as a windbreak plant. It is very hardy in Oklahoma, withstanding drought; farther north it winterkills so it cannot be naturalized. It blooms at an early age on the new wood. It was introduced from China by the Bureau of Plant Industry, Washington. The original discoverer for the Bureau found the plant busy with bees of all kinds. The Chinese employ it for basket manufacture. It is usually propagated from seeds, with only a small percentage of growth. It should be propagated for the late season bee pasture.

Material has been misidentified and distributed in herbaria as typical V. negundo L.

Additional citations: CHINA: Hupeh: H. C. Cheo 4 [Herb. Univ. Nanking 18069] (Bi, Bi). CULTIVATED: England: P. Miller s.n. [Chelsea Physic Gard.; Bailey Hort. neg. 5055] (N—photo). Indiana: D. B. Dunn 12585 (Lb—37912), 12879 (Lb—39954). Virginia: Allard 11390 (Du—350280).

VITEX NEGUNDO var. HETEROPHYLLA f. ALBA (Carr.) Moldenke, Résumé Suppl. 15: 15, hyponym (July 17, 1967), comb. nov.

Synonymy: Agnus castus incisa alba Carr., Rev. Hort. 42/43: 416. 1871.

This form differs from the typical form of the variety in having white corollas. The original description by Carrière (1871) reads as follows: "Diffère du type par ses fleurs d'un blanc pur. Plante très-jolie et très-floribonde."

VITEX NEGUNDO var. HETEROPHYLLA f. MULTIFIDA (Carr.) Rehd.

Additional & emended synonymy: Agnus castus incisa multifida Carr., Rev. Hort. 42/43: 416. 1871. Agnus castus incisa var. multifida Carr. ex C. K. Schneid., Illustr. Handb. Laubholz. 2: 594, in syn. 1911. Vitex negundo heterophylla 'Multifida' Harkness, Phytologia 10: 269. 1964.

Additional & emended bibliography: Carr., Rev. Hort. 42/43: 416. 1871; C. K. Schneid., Illustr. Handb. Laubholz. 2: 594, fig. 384 m & n. 1911; Moldenke, Phytologia 6: 15—16. 1957; Moldenke, Résumé Suppl. 11: 8. 1964; Harkness, Phytologia 10: 269. 1964; Moldenke, Résumé Suppl. 15: 11. 1967.

Emended illustrations: C. K. Schneid., Illustr. Handb. Laubholz. 2: fig. 384 m & n. 1911.

The original description of this plant by Carrière (1871) is as follows: "Diffère du précédent [Agnus castus incisa] par ses rameaux plus ténus, par ses feuilles plus réduits dans toutes leurs parties et plus profondément dentées dans toute leur longueur. Fleurs très-nombreuses, d'un beau bleu, relativement grandes. Plante très-naine et très-floribonde."

VITEX NEGUNDO var. INTERMEDIA (P'ei) Moldenke

Additional synonymy: Vitex incisa Lav. ex Moldenke, Résumé Suppl. 3: 42, in syn. 1962.

Additional bibliography: Hand.-Mazz., Act. Hort. Gothenb. 9: 68. 1934; Lombardo, Arbust. & Arbustil. Pas. Publ. 41, 43, 242, & 314. 1961; Moldenke, Phytologia 8: 68. 1961; Moldenke, Résumé Suppl. 3: 42 (1962) and 11: 5. 1964; Liogier, Rhodora 67: 350. 1965.

Traverse describes this plant as a "tree-shrub 6 m. tall; basal diam. 7 cm. (1 of 4 stems); crown diam. 7 m. (whole clump); loosely irregularly branched, but forming rather dense terminal twigs; bark smooth, tan-brown with vertical ribbings; corolla purple, lip having cream inside, speckled with purple; flower has sweet minty odor, June". He found it on the bank of a ditch at the edge of a yard. Material has been misidentified and distributed in herbaria as typical V. negundo L. and as "Vitex nigundo L."

Unfortunately, P'ei (1932) did not designate any type in his original description of this taxon, and cites the following specimens: CHINA: Chekiang: Barchet 556 & s.n., Ching 2429, Herb. Univ. Nanking 14580. Fukien: Chang & Metcalf 275, Cheng 711, Norton 1558. Honam: Herb. Canton Chr. Coll. 250. Kiangsu: Herb. Univ. Nanking 659, 2990, & 10729, Ren & Tao 27, Young 3236. Kwangtung: Herb. Canton Chr. Coll. 250, 376, 1585, & 3305; Ying 1059. Szechuan: E. H. Wilson 4308 & 4308a. Yunnan: Bock 6981, Maire 1776. HONGKONG: C. Wright s.n.

Additional citations: TEXAS: Harris Co.: Traverse 1322 (Rf). CUBA: Las Villas: A. Gonzales 100 (M, N). INDIA: Mysore: Ramaswamy 511 (Z). CHINA: Hupeh: Cheo 200 [Herb. Univ. Nanking 18265] (B1). CHINESE COASTAL ISLANDS: Hainan: Lau 3051 (B1).

VITEX NEGUNDO var. MICROPHYLLA Hand.-Mazz.

Bibliography: Hand.-Mazz., Symb. Sin. 7: 906. 1936; Moldenke, Phytologia 6: 20. 1957; Moldenke, Résumé 171 & 477. 1959.

VITEX NEGUNDO var. SESSILIS Moldenke

Additional bibliography: Moldenke, Phytologia 6: 20—21. 1957; Moldenke, Résumé 226 & 477. 1959.

VITEX NEO-CALEDONICA Gandoger

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; Moldenke, Phytologia 6: 21. 1957; Moldenke, Résumé 206, 387,

& 477. 1959.

VITEX NLOKAKENSIS Engl.

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Phytologia 6: 21--22. 1957; Moldenke, Résumé 139 & 477. 1959.

VITEX OBANENSIS Wernham

Additional bibliography: Prain, Ind. Kew. Suppl. 5, pr. 1, 273. 1921; Moldenke, Phytologia 6: 22. 1957; Moldenke, Résumé 138 & 477. 1959; Prain, Ind. Kew. Suppl. 5, pr. 2, 273. 1960; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 446. 1963.

Huber (1963) reduces this species to synonymy under *V. thyrsoflora* J. G. Baker.

VITEX OBOVATA E. Mey.

Additional bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Moldenke, Phytologia 6: 22--24. 1957; Moldenke, Résumé 154 & 477. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960.

VITEX ODORATA Huber

Additional & emended bibliography: Prain, Ind. Kew. Suppl. 4, pr. 1, 248. 1913; Le Cointe, Amaz. Bras. III Arv. & Plant. Uteis, ed. 1, 429 (1934) and ed. 2, 456. 1947; Moldenke, Phytologia 6: 24--26. 1957; Prain, Ind. Kew. Suppl. 4, pr. 2, 248. 1958; Moldenke, Résumé 112 & 477. 1959.

Illustrations: Huber, Bol. Mus. Goeldi 5: pl. 4, fig. 22 & 23. 1909.

Le Cointe (1947) reports that this species is found in "Nos campos de Marajó, nos lugares altos." Stapf (1931) cites the Huber references as "1907-8".

VITEX ORINOCENSIS H.B.K.

Additional synonymy: *Vitex orinocense* H.B.K. ex Bocq., Adansonia 3: [Rev. Verbenac.] 253, sphalm. 1863. *Vitex orinocensis* Kunth ex Le Cointe, Amaz. Bras. III Arv. & Plant. Uteis, ed. 2, 456. 1947. *Vitex orinocensis* (Miq.) Huber ex Moldenke, Résumé Suppl. 3: 42, in syn. 1962.

Additional bibliography: Bocq., Adansonia 3: [Rev. Verbenac.] 253. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Moldenke, Phytologia 6: 26--27. 1957; Moldenke, Résumé 74, 387, & 477. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Moldenke, Résumé Suppl. 14: 10. 1966; Moldenke, Phytologia 15: 89, 99, & 101. 1967.

Tamayo describes this plant as a tree, 6--8 m. tall, the leaves with 3--5 leaflets, called "guarataro", and flowering in April. The type specimen, Bonpland 832, deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris, was photographed there by Macbride as his type photograph number 39495.

The Ll. Williams 13295, distributed as *V. orinocensis*, is actu-

ally var. multiflora (Miq.) Huber, while H. Pittier 15069 is V. compressa Turcz.

Additional citations: VENEZUELA: Amazonas: Bonpland 832 [Herb. Willdenow 11704; Macbride photos 39495] (W--photo of type). Guárico: Tamayo 4048 (W--2195307).

VITEX ORINOCENSIS var. GLABRA Moldenke

Bibliography: Moldenke, Phytologia 4: 293--294. 1953; Moldenke, Biol. Abstr. 27: 3121. 1953; Moldenke, Phytologia 6: 27. 1957; Moldenke, Résumé 69 & 477. 1959.

VITEX ORINOCENSIS var. MULTIFLORA (Miq.) Huber

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214. 1895; Stapf, Ind. Lond. 6: 479. 1931; Le Cointe, Amaz. Bras. III Arv. & Plant. Uteis, ed. 1, 429. 1934; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1214. 1946; Le Cointe, Amaz. Bras. III Arv. & Plant. Uteis, ed. 2, 456. 1947; Moldenke, Phytologia 8: 69 (1961) and 15: 101. 1967.

Recent collectors describe this plant as a medium-sized tree, 10--17 m. tall, the trunk diameter 35--40 cm., the bark shallowly and finely fissured, brownish-gray, the leaflets papery, pale-green, slightly glossy above, and the flowers scented, growing on riverbanks, at altitudes of 120--500 m., known as "guarataro" or "taruma frondoso". Bernardi says "Madera dura; corazon de color aceituna", while Le Cointe (1947) reports that it is found in "Nos terrenos argilosos das margens dos rios e tiachos" along the Rio Tapajós, Rio Branco de Óbidos, and "Tesos da cont a-costa de Marajó". He also reports that the wood is used "Propria para lugares úmidos, estelos, moirões, dormentes, segeria". The collars are described as "blue" on Aristeguieta 4574, "lilac" on Archer 7722, and "pale-purple" on Breteler 3662.

An isotype, Kappler 1366, deposited in the herbarium of the Botanisches Museum at Berlin, was photographed there by Macbride as his type photograph number 17562, but is now destroyed.

Material has been misidentified and distributed in herbaria as typical V. orinocensis H.B.K. On the other hand, the Arnoldo 1624, distributed as var. multiflora, is actually V. cymosa Bert. Ducke 836 was taken from material cultivated in Pará, but originally from Marajó Island.

Additional citations: VENEZUELA: Apure: Vélez 2699 (Ve). Barinas: Bernardi 1205 (Ve--47796); Breteler 3662 (N). Bolívar: Bernardi 2915 (Ve); J. A. Steyermark 90773 (Ca); Ll. Williams 13295 (W--1802201). Guárico: Aristeguieta 4574 (Ve). SURINAM: Kappler 1366 [Macbride photos 17562] (W--photo of isotype). BRAZIL: Pará: Frões 34183 (S). CULTIVATED: Brazil: Archer 7722 (N, S); Ducke 836 (W--1875664).

VITEX OSCITANS Moldenke

Synonymy: Vitex occitans Moldenke in Humbert, Fl. Madag. 174:

115, sphalm. 1956.

Bibliography: Moldenke, *Phytologia* 3: 443-444. 1951; Moldenke in Humbert, *Fl. Madag.* 174: 73, 75, 114-116, & 273, fig. 17 (2 & 3). 1956; Moldenke, *Phytologia* 6: 31. 1957; G. Taylor, *Ind. Kew. Suppl.* 12: 151. 1959; Moldenke, *Résumé* 157 & 477. 1959; Moldenke, *Résumé Suppl.* 15: 25. 1967.

Illustrations: Moldenke in Humbert, *Fl. Madag.* 174: 115, fig. 17 (2 & 3). 1956.

VITEX OXYCUSPIS J. G. Baker

Additional bibliography: K. Schum. in *Just, Bot. Jahresber.* 28 (1): 497. 1902; Thiselt.-Dyer, *Ind. Kew. Suppl.* 2: 194. 1904; Cooper & Record, *Yale Univ. Sch. Forest. Bull.* 31: 118 & 153. 1931; Dalz., *Useful Pl. W. Trop. Afr.* 458. 1937; Aubrév., *Fl. For. Cot. Iv.*, ed. 2, 3: 232, pl. 336, fig. 4. 1959; Moldenke, *Phytologia* 8: 69. 1961; F. R. Irvine, *Woody Pl. Ghana* 764. 1961; Huber in Hutchinson & Dalz., *Fl. W. Trop. Afr.*, ed. 2, 2: 445 & 446. 1963; Moldenke, *Phytologia* 15: 264. 1967.

Illustrations: Aubrév., *Fl. For. Cot. Iv.*, ed. 2, 3: pl. 336, fig. 4. 1959.

Irvine (1961) tells us that this is a tree of secondary forests, 15--35 feet tall, with a trunk 3 feet in diameter, the branchlets glabrous, leaves digitate, leaflets 5, oblanceolate, mostly over 4 inches long, acuminate at the apex, coarsely serrate along the margins, cuneate at the base, almost glabrous, the flowers small, in lax long-pedunculate cymes, the calyx nearly glabrous, and the fruits black, to 1 inch long. Dalziel (1937) reports that the wood is white and soft, used only for house-poles. It has been found in flower in February and in fruit in November. The vernacular name "kpar-seh" is applied also to *V. rufa* A. Chev. and "fevei" is applied also to *V. micrantha* Gürke.

Huber (1963) cites the following specimens: SIERRA LEONE: *D. Small* 613; *Unwin & Smythe* 37. LIBERIA: *G. P. Cooper* 321. IVORY COAST: *Boughey G.C.* 14858. NIGERIA: Southern: *Jones & Keay F.H.I.* 36163; *A. F. Ross* 234; *Talbot* 2061 bis. He also records it from Angola.

VITEX OXYCUSPIS var. MOSSAMBICENSIS Moldenke

Bibliography: Moldenke, *Bol. Soc. Brot.*, ser. 2, 40: 122. 1966.

This variety differs from the typical form of the species in having its branchlets shortly fulvous-puberulent, the petioles to 11 cm. long, the leaflets elliptic, minutely fulvous-puberulent beneath, the peduncles to 1.5 cm. long and densely short-pubescent, the branches of the inflorescence and the calyx densely short-pubescent, and the calyx-teeth large and triangular.

The type of the variety was collected by Dr. António Rocha da Torre (no. 6323, in part) in sandy soil in dense deciduous forest of *Brachystegia* at Dondo, Cheringoma, Manica e Sofala, Portuguese East Africa, on December 31, 1943, and is deposited in the her-

barium of the Centro de Botânica, Junta de Investigações, in Lisbon. The type specimen was originally mixed with material of V. tangensis Gürke.

Citations: PORTUGUESE EAST AFRICA: Manica e Sofala: Torre 6323, in part (Ul--type, Ul--isotype).

VITEX PACHYCLADA J. G. Baker

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214. 1895; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 76, 79, & 84, pl. 11. 1928; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1214. 1946; Moldenke in Humbert, Fl. Madag. 174: 77, 144--146, & 273, fig. 23 (5 & 6). 1956; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Moldenke, Phytologia 8: 69. 1961.

Illustrations: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: pl. 11. 1928; Moldenke in Humbert, Fl. Madag. 174: 145, fig. 23 (5 & 6). 1956.

VITEX PACHYPHYLLA J. G. Baker

Additional bibliography: K. Schum. in Just, Bot. Jahresber. 28 (1): 497. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 194. 1904; Stapf, Ind. Lond. 6: 479. 1931; Moldenke, Phytologia 6: 33--34. 1957; Moldenke, Résumé 140 & 477. 1959.

VITEX PADANGENSIS H. Hallier

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; Moldenke, Phytologia 8: 69. 1961.

VITEX PANSHINIANA Moldenke

Additional synonymy: Vitex panshiana Moldenke, Résumé Suppl. 6: 11, in syn. 1963.

Additional bibliography: Hill & Salisb., Ind. Kew. Suppl. 10: 244. 1947; Moldenke, Phytologia 6: 34--36 & 83 (1957) and 8: 69--70. 1961; Moldenke, Résumé Suppl. 6: 11. 1963; Moldenke, Phytologia 15: 110. 1967.

Recent collectors describe this plant as a tree, 8--15 m. tall, the trunk 50 cm. in diameter, and the calyx green, leaning over rocks in thin woody vegetation at the edge of the forest on soil overlying rock, at 100 m. altitude, flowering in October. The corollas are described as "white and lilac" on Ducke 2488 and "blue to partially bluish-white" on Murça Pires & Westra 48839.

Additional citations: BRAZIL: Amapá: Murça Pires & Westra 48839 (N). Ceará: Ducke 2488 (N, W--2341338).

VITEX PANSHINIANA var. PULCHRA Moldenke

Additional bibliography: Moldenke, Phytologia 6: 36 & 83. 1957; Moldenke, Résumé 111 & 477. 1959.

VITEX PARVIFLORA A. L. Juss.

Additional synonymy: Vitex timorensis Walp. ex E. D. Merr., Philip. Journ. Sci. Bot. 1, Suppl. 1: 121, sphalm. 1906. Vitex pawiflora Juss. ex Moldenke, Résumé Suppl. 3: 42, in syn. 1962. Vitex altissima "Naves ex F. Villar" apud Menninger, Seaside Pl. 213. 1964.

Additional & emended bibliography: Bocq., Adansonia 3: [Rev. Verbenac.] 253. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1213 & 1214. 1895; Perkin, Journ. Chem. Soc. 73: 1019. 1898; Brandis, Indian Trees 503. 1906; E. D. Merr., Philip. Journ. Sci. Bot. 1, Suppl. 1: 121. 1906; E. D. Merr., Interpret. Rumph. Herb. Amboin. 452 & 594. 1917; A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; Stapf, Ind. Lond. 6: 478 & 479. 1931; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1213 & 1214. 1946; Hill & Salisbury, Ind. Kew. Suppl. 10: 244. 1947; Neal, In Gard. Hawaii, ed. 1, 643. 1948; H. F. MacMillan, Trop. Plant. & Gard., ed. 5. 1948; Moldenke in Humbert, Fl. Madag. 174: 77. 1956; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1213 & 1214. 1960; Maun, Philip. Journ. Forest. 16: 95—110. 1960; Moldenke, Phytologia 8: 70—71. 1961; Menninger, Hort. Books Warm Regions [8]. 1961; Anon., Biol. Abstr. 40: B.115. 1962; Meher-Homji, Trav. Sect. Scient. Inst. Franç. Pond. 7 (1): 171. 1963; Menninger, 1964 Seed List [4]. 1964; A. L. Moldenke, Phytologia 11: 70. 1964; Menninger, Seaside Pl. 213. 1964; Anon., Biol. Abstr. 45: B.120. 1964; D. S. Rao, Naturwiss. 52 (10): 262. 1965; Neal, In Gard. Hawaii, ed. 2, 729. 1965; Backer & Bakh., Fl. Java 2: 606. 1965; Liogier, Rhodora 67: 350. 1965; Anon., Biol. Abstr. 47: 2888. 1966; Moldenke, Phytologia 15: 77. 1967.

Additional & emended illustrations: Blanco, Fl. Filip. 2: pl. 227 [in color]. 1878; Brandis, Indian Trees 503. 1906.

Backer & Bakhuizen van den Brink (1965) describe this plant as follows: "Leaflets 3, glabrous or short-hairy on the midrib beneath (median one on a petiolule of 3/4 -- 2 cm length), oblong or oblong-lanceolate, acute, 6--15 cm by 2 -- 5 1/2 cm, lateral ones somewhat shorter petioluled and smaller; petiole 2--10 cm. Panicles terminal and in the upper leaf-axils, rather lax, 5--20 cm long; bracts caducous, narrow; calyx-tube c. 2 mm; teeth distant, small; corolla-tube 5--6 mm; median segment of lower lip 3 1/2 -- 4 1/2 mm by 4--5 mm; ovary glabrous or shortly pubescent on the top; drupe glabrous or subglabrous. Tree or shrub. Native to the Philippines and the eastern part of Malesia; stated to have once been collected near Cheribon (W) [This statement needs confirmation]."

Menninger (1964) points out that "This Malasian evergreen tree with dense head and somewhat drooping branches, is sometimes known as V. littoralis Decne. This and V. leucoxydon L. grow on the seaside in India, according to Macmillan.... This should not be confused with V. altissima L. which also grows in India but never by the sea." Will describes it as a large tree, to 10 m. tall, densely branched. It has been collected in flower and

and fruit in December, the fruit described as black "berries" by Judd [actually they are drupes]. The corolla is described as "lilac" on A. A. Will s.n. and as "light-blue" on A. F. Judd s.n. The specific portion of the name Vitex timoriensis Walp. is often upcased.

The Alain 9967, distributed as V. parviflora, is actually V. divaricata Sw.

Additional citations: WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Cabucan: Kondo & Edaño 8864 [Philip. Nat. Herb. 38834] (Bi). Luzon: S. Aguilar s.n. [Herb. Philip. Forest. Bur. 14333] (Bi); Alambra s.n. [Herb. Philip. Forest. Bur. 23086] (Bi); Cenabre & party s.n. [Herb. Philip. Forest. Bur. 28519] (Bi); Elmer 17286 (Bi); Haenke s.n. [Luzon, 1792] (Bi). Masbate: H. N. Whitford 1676 (Bi). Mindanao: Elmer 11031 (Bi), 13440 (Bi); Wenzel 2759 (Bi, Mi). Sibuyan: Elmer 10995 (Bi). MARIANA ISLANDS: Guam: R. V. Moran 4597 (Bi); Rodin 794 (W-1968683). POLYNESIA: HAWAIIAN ISLANDS: Oahu: A. F. Judd s.n. [Nov. 7, 1936] (Bi), s.n. [Dec. 10, 1938] (Bi). CULTIVATED: Florida: A. A. Will s.n. [27 Dec. 1961] (Fg). Hawaiian Islands: O. Degener 11243 (Bi); Degener & Park 9509 (Bi); Greenwell s.n. [O. Degener 19385] (Bi); A. F. Judd s.n. [Dec. 1, 1930] (Bi).

VITEX PARVIFLORA var. PUBERULENTA Moldenke

Bibliography: Moldenke, *Phytologia* 3: 489 (1951) and 6: 41-42. 1957; Moldenke, *Résumé* 185 & 477. 1959.

VITEX PARVIFLORA f. STERILIS H. J. Lam

Additional bibliography: Moldenke, *Phytologia* 8: 71. 1961.

Additional citations: WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Luzon: H. H. Bartlett 14940 (Bi); Eder s.n. [Herb. Philip. Forest. Bur. 28569] (Bi); Fénix 3 (Bi). Mindanao: Elmer 14218, in part (Bi).

VITEX PATULA E. A. Bruce

Additional bibliography: G. Taylor, *Ind. Kew. Suppl.* 12: 151. 1959; Moldenke, *Phytologia* 8: 7. 1961.

VITEX PAYOS (Lour.) Merr.

Additional synonymy: Allasia payos Lour. ex Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 1: 77, in syn. 1893. Vitex payos Merr. ex Watt & Breyer-Brandwijk, *Med. & Poison. Pl. S. Afr.*, ed. 2, 1055 & 1454. 1962.

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 1: 77 (1893) and 2: 1213. 1895; K. Schum. in Just, *Bot. Jahresber.* 28 (1): 497. 1902; Thiselt.-Dyer, *Ind. Kew. Suppl.* 2: 194. 1904; Prain, *Ind. Kew. Suppl.* 4, pr. 1, 248. 1913; A. W. Hill, *Ind. Kew. Suppl.* 9: 297. 1938; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 1: 77 (1946) and 2: 1213. 1946; Prain, *Ind. Kew. Suppl.*

4, pr. 2, 248. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 77 (1960) and 2: 1213. 1960; Cockbill, Rhod. Agric. Journ. 58: 173—177 & 370—373. 1961; Moldenke, Phytologia 8: 71—72. 1961; Cockbill, Weed Abstr. 11: 158 & 159. 1962; Watt & Breyer-Brandwijk, Med. & Poison. Pl. S. Afr., ed. 2, 1055 & 1454. 1962; Moldenke, Biol. Abstr. 37: 1062. 1962; Anon., Assoc. Etud. Tax. Fl. Afr. Trop. Index 1961: 60. 1962; Hocking, Excerpt. Bot. A.6: 534. 1963; H. P. Riley, Fam. Flow. Pl. S. Afr. 129. 1963.

Schumann (1902) places V. guerkeana Engl. in the synonymy of V. ferruginea Schum. & Thonn., a disposition with which I do not concur.

Recent collectors describe this plant as a tree, 5—12 m. tall, with a trunk 40—70 cm. in diameter at a height of 2—3 m., or as a shrub, 4 m. tall, growing in deciduous or open deciduous forests, open forests, open Brachystegia forests, in sandy soil, and in forests with Chlorophora excelsa, Cussonia arborea, and Sterculia appendiculata, in black sandy soil, at altitudes of 150—600 m., fruiting from January to March and in May, the fruit being edible. The corolla is described as "white, with a lilac lip" on F. A. Mendonça 1260. Additional vernacular names recorded for the species are "chicouvocica", "chicubo", "chicunvo", "meforra", "mefuvo", "mucuve", "nacuna", "namahahure", and "purro".

Riley (1963) states that this plant provides the native people with sticks which are rubbed together to start fires; it is also used in the treatment of asthma and coughs. Cockbill (1961) reports that the species is resistant to the chemical brush killers used to control brush in areas cleared to check the spread of the tsetse fly.

Material has been misidentified and distributed in herbaria as var. glabrescens (Pieper) Moldenke. The F. A. Mendonça 1260 previously cited as deposited in my personal herbarium is now in that of the Texas Research Foundation at Renner, Texas.

Additional citations: RHODESIA: Leach 9693 (Mi). PORTUGUESE EAST AFRICA: Inhambane: Torre 2735 (Ul), 2748 (Ul). Manica e Sofala: Andrada 1042 (Ul); Barbosa 864 (Ul), 887 (Ul), 999 (Ul), 1280 (Ul); Garcia 135 (Ul); F. A. Mendonça 2624 (Ul, Z); Simão 232 (Ul), 318 (Ul); Torre 2781 (Ul), 3161 (Ul). Mozambique: Andrada 1458 (Ul); M. F. Correia 110 (Rf, Ul); Lemos & Macuácuá 17 (Ul); F. A. Mendonça 1260 (Ul, Z); Torre 1086 (Ul); Torre & Paiva 9278 (Ul), 11331 (Ul). Zambezia: Torre 4893a (Ul), 5369 (Ul), 5431 (Ul, Ul), s.n. [Nhamacurra] (Ul).

VITEX PAYOS var. GLABRESCENS (Pieper) Moldenke

Additional bibliography: Moldenke, Phytologia 8: 72. 1961.

Recent collectors have found this plant growing in forests of Brachystegia boehmii and B. spiciformis, at an altitude of 900 meters. The Lemos & Macuácuá 17, distributed as this variety, seems

to be better placed as typical V. payos (Lour.) Merr. in the fruiting stage. The pubescence on the variety is much shorter and finer than it is in the fruiting stage of the typical form of the species.

Additional citations: PORTUGUESE EAST AFRICA: Mozambique: Torre & Paiva 9903 (U1), 10479 (U1).

VITEX PAYOS var. STIPITATA Moldenke

Bibliography: Moldenke, *Phytologia* 8: 72. 1961; Moldenke, *Biol. Abstr.* 37: 1062. 1962; Anon., *Assoc. Etud. Tax. Fl. Afr. Trop. Index* 1961: 60. 1962; Hocking, *Excerpt. Bot. A.6*: 534. 1963.

VITEX PAYOS var. ZAMBESIACA (J. G. Baker) Moldenke

Additional bibliography: K. Schum. in *Just, Bot. Jahresber.* 28 (1): 497. 1902; *Thiselt.-Dyer, Ind. Kew. Suppl.* 2: 194. 1904; Moldenke, *Phytologia* 6: 48. 1957; Moldenke, *Résumé* 151, 384, 391, & 477. 1959.

VITEX PEARSONII Pieper

Additional bibliography: Prain, *Ind. Kew. Suppl.* 3: 189. 1908; A. W. Hill, *Ind. Kew. Suppl.* 8: 249. 1933; Moldenke, *Phytologia* 6: 24 & 48—49. 1957; Moldenke, *Résumé* 151, 384, & 477. 1959.

VITEX PEDUNCULARIS Wall.

Additional synonymy: Vitex peduncularis "Wall. ex Schau." apud Anon., *Kew Bull. Gen. Index* 1929—1956, 293. 1959. Vitex pedunculata Wall. ex Moldenke, *Résumé Suppl.* 3: 42, in syn. 1962.

Additional & emended bibliography: *Jacks. in Hook. f. & Jacks., Ind. Kew.*, pr. 1, 2: 1213 & 1214. 1895; Craib, *Kew Bull. Misc. Inf.* 9: 443. 1911; Craib, *Contrib. Fl. Siam Dicot.* 164. 1912; Vaughan, *Brit. Med. Journ. Feb.* 5. 1921; Vaughan, *Indian Forester* 47: 286—288, pl. 9 & 10. 1921; Haines, *Bot. Bihar & Orissa* 4: 711 & 712. 1922; Gamble, *Fl. Madras* 6: 1102 & 1103. 1924; Chopra, Knowles, & Gupta, *Indian Med. Gaz.* 58: 133. 1925; Stapf, *Ind. Lond.* 6: 479. 1901; Fletcher, *Kew Bull. Misc. Inf.* 1938: 432 & 436. 1938; Worsdell, *Ind. Lond. Suppl.* 2: 501. 1941; *Jacks. in Hook. f. & Jacks., Ind. Kew.*, pr. 2, 2: 1213 & 1214. 1946; Bor & Raizada, *Some Beaut. Ind. Climbers* [136]. 1954; V. N. Sharma, *Journ. Sci. Ind. Research* 14b: 267. 1955; Rao & Venkiteswaralu, *Current Sci. India* 25: 328. 1956; Sharma, *Chem. Abstr.* 1956: 50. 1956; Karrer, *Konstit. & Vork. Organ. Pflanzenst.* 590. 1958; Anon., *U. S. Dept. Agr. Bot. Subj. Index* 15: 14362. 1959; Anon., *Kew Bull. Gen. Index* 1929—1956, 293. 1959; *Jacks. in Hook. f. & Jacks., Ind. Kew.*, pr. 3, 2: 1213 & 1214. 1960; Anon., *Bull. Bot. Surv. India* 2: 270—271. 1960; Moldenke, *Dansk Bot. Arkiv* 23: 92. 1963; Legris, *Trav. Sect. Scient. Inst. Franç. Pond.* 6: 201, 508, 516, & 586. 1963; Deb, *Bull. Bot. Surv. India* 5: 53. 1963; Panigrahi, Chowdhury, Raju, & Deka, *Bull. Bot. Surv. India* 6: 256. 1964; Chopra, Badhwar, & Ghosh, *Poison. Pl. India* 2: 695. 1965; D. S. Rao, *Naturwiss.* 52 (10): 262. 1965; Anon., *Biol. Abstr.* 47: 2888. 1966; H. Wagner in Swain, *Compar. Phytochem.* 310. 1966; T. Swain, *Compar. Phytochem.*

348. 1966; Moldenke, *Résumé Suppl.* 15: 9. 1967.

Emended illustrations: Vaughan, *Indian Forester* 47: pl. 9 & 10. 1921.

Recent collectors describe this plant as a shrub, 5 feet tall, or a small tree, the trunk to 1 foot in diameter, the leaves 3--5-foliolate, with oil glands which show as pellucid dots, the calyx dotted with golden scales or glands on the outside, the corolla covered with stiff white appressed hairs, and the fruit red, growing in thickets, deep forests, mixed deciduous forests with oaks, dry deciduous forests, dry deciduous forests dominated by Pentacme suavis, or open grassy oak-dipterocarp forests, at altitudes of 200--1365 m., flowering in April and July, fruiting in February and July, and called "awal". The corollas are described as "cream" on Kingdon-Ward 22162. It is said to be a common species in the deciduous forests of northern Thailand, but Panigrahi and his associates (1964) refer to it as "rare" in Orissa. Haines (1922) says "The form with winged petioles is called var. roxburghiana, but all seedlings have winged petioles and these persist sometimes to maturity."

Bor & Raizada (1954) tell us that this is "a common tree of Assam, contains a light yellow, crystalline substance which is identical with vitexin, the active principle of Saponaria officinalis and Vitex littoralis. Dr. S. Krishna (Biochemist, Forest Research Institute) informs us that the mature leaves of Vitex peduncularis lose their vitexin. In Assam a decoction of the leaves is always used in cases of black-water fever and many cases are reported to have been cured by its use. Its reputation is so great that a large quantity of seed and even seedlings have been sent from Assam to other provinces." Its distribution is given as Pakistan, India, and Burma to Indochina and Thailand.

Sharma (1956) reports that vitexin, $C_{15}H_{14}O_6$, is found in this species. Chopra, Badhwar, & Ghosh (1965) record the species from Bihar, Assam, Bengal, and Madras, and state that it contains traces of an alkaloid. An infusion of the leaves is locally esteemed as a cure for blackwater fever and malaria, but "it appears to be absolutely ineffective in the latter disease."

Additional citations: INDIA: Assam: Chand 2602 (Mi); Koelz 25044 (Mi), 28192 (Mi). BURMA: Kingdon-Ward 22162 (Bm). THAILAND: Gram & Syrach-Larsen 48 (Cp).

VITEX PEDUNCULARIS var. ROXBURGHIANA C. B. Clarke

Additional bibliography: Roxb., *Fl. Ind.*, repr. ed. Carey, 482. 1874; Campbell & Watt, *Descrip. Cat. Econom. Prod. Chutia Nagpur* No. 9281; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1213. 1895; Haines, *Bot. Bihar & Orissa* 4: 711 & 712. 1922; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 2: 1213. 1946; Moldenke, *Phytologia* 6: 51--52. 1957; Moldenke, *Résumé* 159, 165, 166, 380, & 477. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 2: 1213. 1960.

VITEX PENTADACTYLA Velenovsky

Additional bibliography: Moldenke, *Phytologia* 6: 52—53. 1957; Moldenke, *Résumé* 227 & 477. 1959.

VITEX PENTAMERA Engelhardt

Additional bibliography: Moldenke, *Phytologia* 6: 53. 1957; Moldenke, *Résumé* 227 & 477. 1959.

VITEX PERRIERI Danguy

Additional bibliography: A. W. Hill, *Ind. Kew. Suppl.* 7: 252. 1929; Moldenke in Humbert, *Fl. Madag.* 174: 72, 91—93, & 273, fig. 12 (7—9). 1956; Moldenke, *Phytologia* 6: 53—54. 1957; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14361. 1958; Moldenke, *Résumé* 157 & 477. 1959.

Illustrations: Moldenke in Humbert, *Fl. Madag.* 174: 91, fig. 12 (7—9). 1956.

VITEX PERVILLEI J. G. Baker

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Moldenke in Humbert, *Fl. Madag.* 174: 72, 88—89, 91, & 273, fig. 12 (1 & 2). 1956; Moldenke, *Phytologia* 6: 54—56. 1957; Moldenke, *Résumé* 155, 157, & 477. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 2: 1214. 1960.

Illustrations: Moldenke in Humbert, *Fl. Madag.* 174: 91, fig. 12 (1 & 2). 1956.

VITEX PERVILLEI var. PUBESCENS Moldenke

Bibliography: Moldenke, *Phytologia* 3: 444—445. 1951; Moldenke in Humbert, *Fl. Madag.* 174: 72, 89, 91, & 273, fig. 12 (3 & 4). 1956; Moldenke, *Phytologia* 6: 56. 1957; Moldenke, *Résumé* 157 & 477. 1959.

Illustrations: Moldenke in Humbert, *Fl. Madag.* 174: 91, fig. 12 (2 & 3). 1956.

VITEX PETERSIANA Klotzsch

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214. 1895; K. Schum. in Just, *Bot. Jahresber.* 28 (1): 497. 1902; Thiselet-Dyer, *Ind. Kew. Suppl.* 2: 194. 1904; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 2, 2: 1214 (1946) and pr. 3, 2: 1214. 1960; Moldenke, *Phytologia* 8: 72—73. 1961.

The *Balsinhas* 201, distributed as *V. petersiana*, is actually *V. harveyana* H. H. W. Pearson.

VITEX PETERSIANA var. TETTENSIS (Klotzsch) Pieper

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Moldenke, *Phytologia* 6: 57. 1957; Moldenke, *Résumé* 151, 389, & 477. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 2: 1214. 1960.

VITEX PHAEOTRICHA Mildbr.

Additional synonymy: Vitex rufa A. Chev., Expl. Bot. Afr. Occid. Franç. 1: 507, hyponym. 1920; Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 1, 2: 275. 1931. Vitex monrovia Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 44, 58, & 83. 1928; Fedde, Repert. Spec. Nov. 26: 163. 1929.

Additional & emended bibliography: A. Chev., Expl. Bot. Afr. Occid. Franç. 1: 507. 1920; A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 44, 45, 58, 80, 83, & 84. 1928; Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 1, 2: 275. 1931; Cooper & Record, Yale Univ. Sch. Forest. Bull. 31: 118 & 153, pl. 11. 1931; A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Dalz., Useful Pl. W. Trop. Afr. 458. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 297. 1938; Worsdell, Ind. Lond. Suppl. 2: 501. 1941; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 46, 48, 101, 103, & 104. 1942; Moldenke, Phytologia 2: 122. 1944; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 112, 114, & 202. 1949; Cavaco, Bull. Mus. Hist. Nat. Paris, ser. 2, 27: 91. 1955; C. & M. Goodnight, Biol. Abstr. 30: 1703. 1956; Anon., Assoc. Etud. Fl. Afr. Trop. Index 1955: 63. 1956; Moldenke, Phytologia 5: 484-485 (1957) and 6: 57-58 & 118-119. 1957; Anon., Biol. Abstr. 30: 4370. 1958; A. Fernandes, Mem. Soc. Broter. 13: 34. 1958; Aubrév., Fl. For. Cot. Iv., ed. 2, 3: 232, pl. 335, fig. 4-6. 1959; Moldenke, Résumé 137, 139, 477, & 478. 1959; G. Taylor, Ind. Kew. Suppl. 12: 151. 1959; Moldenke, Phytologia 8: 47, 64, & 79. 1961; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 445 & 447. 1963; Moldenke, Résumé Suppl. 15: 6, 7, & 25. 1967; Moldenke, Phytologia 15: 99 & 267. 1967.

Illustrations: Cooper & Record, Bull. Yale Univ. School Forest. 31, pl. 11 [as V. rufa]. 1931; Aubrév., Fl. For. Cot. Iv., ed. 2, 3: pl. 335, fig. 4-6. 1959.

Huber (1963) describes this plant as a forest tree, 40-45 ft. tall, with abundant long rust-colored indumentum, the inflorescence, petioles, lower leaf-surface, and young branches densely villous with long rust-colored, rust-red, or orange-brown hairs, the leaflets obovate, the central one 9-16 cm. long and 4-7.5 cm. wide, usually with 10-16 pairs of secondaries, and the flowers small, "white and purple". He cites the following specimens: SIERRA LEONE: Edwardson 221, Wallace S.L.F.D.74. LIBERIA: Baldwin 9155, G. P. Cooper 67, Dinklage 2194 & 3058, Harley 1480. IVORY COAST: Aubréville 4076, A. Chevalier 19712.

Dalziel (1937), along with Cooper & Record (1931), inform us that the fruits are oval, with a persistent disk-like fruiting-calyx, the wood is not very hard and is used in Liberia to make small "devil drums", rice bowls, tool handles, etc., and in native house construction. For the "devil drums" the bole is hollowed out. A lotion is made from the bark and leaves to wash ulcers. The species is known as "kpar-seh" in Liberia, as is also V. oxy-cuspis J. G. Baker and others of this genus.

The Dinklage 2194, distributed as this species and so cited by Huber, is actually V. congolensis DeWild. & Th. Dur.

VITEX PHASEOLIFOLIA Mildbr.

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 7: 252 (1929) and 8: 249. 1933; Moldenke, Phytologia 6: 58--59. 1957; Moldenke, Résumé 139, 379, & 477. 1959.

VITEX PHILLYREAEFOLIA J. G. Baker

Synonymy: Vitex phillyraefolia J. G. Baker ex Moldenke in Humbert, Fl. Madag. 174: 115, sphalm. 1956.

Additional bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Moldenke in Humbert, Fl. Madag. 174: 75, 115--117, & 273, fig. 17 (4 & 5). 1956; Moldenke, Phytologia 6: 59. 1957; Moldenke, Résumé 157 & 477. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Moldenke, Résumé Suppl. 15: 25. 1967.

Illustrations: Moldenke in Humbert, Fl. Madag. 174: 115, fig. 17 (4 & 5). 1956.

VITEX PIERREANA Dop

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 297. 1938; Moldenke, Phytologia 8: 73. 1961.

Additional citations: CHINESE COASTAL ISLANDS: Hainan: Lau 3649 (B1), 3885 (B1).

VITEX PIERREI Craib

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; Fletcher, Kew Bull. Misc. Inf. 1938: 431 & 433. 1938; Anon., Kew Bull. Gen. Index 1929-1956, 293. 1959; Moldenke, Phytologia 8: 73. 1961.

Additional citations: THAILAND: Mrs. D. J. Collins 706 (B1).

VITEX PINNATA L.

Additional & emended synonymy: Vitex bracteata Horsf. ex Miq., Fl. Ind. Bat. 2: 862, in syn. 1858. Vitex pubescens ptilota Dop ex Worsdell, Ind. Lond. Suppl. 2: 500. 1941. Tetrandra? paucidens Miq. ex Moldenke, Résumé Suppl. 4: 13, in syn. 1962. Vitex latifolia Auct. ex Backer & Bakh., Fl. Java 2: 606, in syn. 1965.

Additional & emended bibliography: N. L. Burm., Fl. Ind. 138, pl. 43, [fig. 2]. 1768; Hook., Bot. Misc. 285. 1830; W. Jack, Calc. Journ. Nat. Hist. 4 (13): 40. 1843; Hassk., 2e Cat. Lands Fl. Tuin Buitenz. 134. 1844; Bocq., Adansonia 3: [Rev. Verbenac.] 253. 1863; Beddome, Forester's Man. Bot. S. Ind. 171. 1873; H. O. Forbes, Wand. Naturforsch. Malay. Arch. 2: 226. 1886; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1213 & 1214. 1895; C. B. Clarke in J. Schmidt, Bot. Tidskr. 26: 173. 1904; Craib, Contrib. Fl. Siam Dicot. 164. 1912; E. D. Merr., Interpret. Rumph. Herb. Amboin. 292, 310, & 594. 1917; H. N. Ridl., Journ. Fed. Malay States Mus. 10: 111. 1920; E. D. Merr., Philip. Journ. Sci. 19: 331. 1921; Haines, Bot. Bihar & Orissa 4: 711. 1923; Gamble, Fl. Madras 6: 1102 & 1103. 1924; Stapf, Ind. Lond. 6: 478 & 479. 1931; Backer, Tectona 29: 691. 1936; Fletcher, Kew Bull. Misc. Inf. 1938: 432 & 435. 1938; Jacks. in Hook. f. & Jacks., Ind. Kew., pr.

2, 2: 1213 & 1214. 1946; Neal, In Gard. Hawaii, ed. 1, 643. 1948; Moldenke in Humbert, Fl. Madag. 174: 71, 77, 79, 119, 272, & 273, fig. 10 (1 & 2). 1956; Gilliland & Jabil, Proc. Sympos. Humid Trop. Veg. 62 & 64. 1958; Moldenke, Biol. Abstr. 32: 222. 1958; Anon., Kew Bull. Gen. Index 1929-1956, 293. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1213 & 1214. 1960; Rosayro, Sympos. Impact Man Humid Trop. Veg. 287, 289, 300, & 301. 1960; Kosterm., Sympos. Impact Man Humid Trop. Veg. 337. 1960; Maun, Philip. Journ. Forest. 16: 108. 1960; Moldenke, Phytologia 8: 73-75. 1961; Satmoko, Malay. Nat. Journ. Spec. Issue 120. 1961; Hocking, Excerpt. Bot. A.5: 42. 1962; Legris, Trav. Sect. Scient. Inst. Franç. Pond. 6: 184, 192, 193, 197, 501, 508, 521, & 586. 1963; Santapau & Wagh, Bull. Bot. Surv. India 5: 109. 1963; Hegnauer, Chemotax. Pfl. 3: 39. 1964; Moldenke, Résumé Suppl. 10: 4. 1964; Neal, In Gard. Hawaii, ed. 2, 729. 1965; F. R. Fosberg, Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg. 282. 1965; Mani, Bull. Bot. Surv. India 7: 114. 1965; Moldenke, Phytologia 14: 10 (1966) and 15: 88, 226, & 255. 1967; Moldenke, Résumé Suppl. 15: 25. 1967.

Additional illustrations: Moldenke in Humbert, Fl. Madag. 174: 79, fig. 10 (1 & 2). 1956.

Backer & Bakhuizen van den Brink (1965) describe this species as follows: "Leaflets 3-5, rather densely pubescent beneath at least on the nerves (median one on a petiolule of 2-8 mm length), ovate-elliptic-oblong, acute or obtuse, 8 -- 22 1/2 cm by 3 1/2 - 9 3/4 cm; following leaflets smaller, usually shorter-petiololed, 2 ultimate ones (in 5-foliolate leaves) sessile or subsessile; petioles 3 1/2 -- 10 1/2 cm. Panicles terminal and in the upper leaf-axils, ovoid or pyramidal, dense, 8--25 cm long; bracts super-persistent, rather large (7--12 mm by 2--7 mm); calyx-tube 4--5 mm; teeth 1/2 -- 1 1/2 mm; corolla pale outside, blue-violet inside; tube 8--10 mm; median lobe of lower lip c. 10 mm by c. 8 mm; ovary glabrous; drupe globose, juicy, c. 3/4 cm diam. Tree..... mixed- and teak-forest, secondary forest, village-groves". They say, further, "In young trees the petiole is sometimes winged; such young trees have been misidentified as *V. altissima* L." [cfr. *C. pinnata* var. *alata* Moldenke].

The *Vitex pinnata* Burm. f. and *V. pinnata* Lour. are *Aglaia odorata* Lour. in the *Meliaceae*. Merrill (1921) regards *V. pinnata* L. as conspecific with *V. altissima* L.f., with which I do not agree.

Turczaninow's original (1863) description of *V. inaequifolia* is as follows: "V. caule ramisque tetragonis cum petiolis atque inflorescentia pubescentibus; foliis oppositis petiolatis; foliolis sessilibus ternatis, exterioribus minoribus, omnibus subellipticis obtusis vel acutiusculis saepe emarginatis, basi rotundatis vel parum attenuatis integerrimis, creberrime reticulatis, supra nitidulis ad nervationes tantum puberulis, subtus paulo magis vestitis; paniculis terminalibus folia non superantibus; bracteis spathulatis flores aequantibus; calyce acute 5-dentato, corolla duplo brevior. India orientalis, collectore ignoto."

Recent collectors describe this plant as a tree, 4--15 m. tall, the blaze yellow over tan, the branches pendulous, and the anthers black, flowering also in October, growing in rainforests, the margins of evergreen forests, and in tree and shrub islands by ponds. In Thailand it is said by King to grow "in open sun, cutover pastures at base of hill with shrubs and trees to 30 m. tall, the soil a thin dark gray clay over limestone."

The corolla is described as "white" on R. M. King 5499, "lavender to dirty-white" on R. M. King 5422, "pale purplish-white" on Boongird 22, and "upper lobes white, lower lobes violet-blue" on Harrison & Persaud 1551. There are wood vouchers accompanying R. M. King 5422 & 5499 and Toroos 364 & 1580.

Mani (1965) describes a gall made by Eriophyes cryptotrichus Nalepa on this plant; it is an epiphyllous, hemispheric, verrucose pouch gall, 0.5--5 mm. in diameter, and is his gall number 29.

The following bibliographic references are given for this species, but have not been traced or checked as yet by me: Jasper & Pirngadie, Batikkunst 47; Burg, Geneesheer 3: 163; Boorsma, Plantenstoffen 4: 110; Ridley, Mal. Timb. 84; Gamble 772.

Material has been misidentified and distributed in herbaria under various names. On the other hand, the Gram & Syrach-Larsen 110, distributed as V. pinnata, is actually V. longisepala King & Gamble.

Additional citations: BURMA: Dickason 6812 (Mi). THAILAND: Boongird 22 [Herb. Roy. Forest Dept. 2485] (W-2035011); Hansen & Smitinand 12186 (Cp); R. M. King 5422 (Du-502271), 5499 (Du-502286, Du-502292); K. Larsen 10029 (Lw); Larsen, Smitinand, & Warncke 1571 (Ac, Rf). WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Balabac: S. Olsen 541 (Ac, Cp), 616 (Cp). Palawan: Elmer 12660 (Bi), 13004 (Bi). INDONESIA: GREATER SUNDA ISLANDS: British North Borneo: Elmer 20101 (Bi), 21095 (Bi). Kambangan: Collector indig. s.n. [7-6-09] (Bi). Sumatra: H. H. Bartlett 8738 (Mi, Mi); Toroos 364 (Mi, Mi), 1580 (Mi), 2367 (Mi); Yates 611 (Mi), 663 (Mi), 1267 (Mi). CULTIVATED: British Guiana: Harrison & Persaud 1551 (N). Hawaiian Islands: F. R. Fosberg 13625 (Bi); Korte s.n. [Nov. 2, 1953] (Bi); Rock 12603 (Bi, Bi, Bi, Bi, Bi), 12811 (Bi). Java: Herb. Hort. Bot. Bogor. XI.K.13 (Bi); E. D. Merrill s.n. [XIII.J.33] (W-438696).

VITEX PINNATA var. ALATA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 75. 1961.

Backer & Bakhuizen van den Brink (1965) state that the winged petioled specimens of this species are merely from young trees. However, the type specimen of this variety was in fruit, so, even if young trees normally produce winged petioles, the condition apparently sometimes persists until the trees are sufficiently mature to produce flowers and fruit.